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EXAMINER

HU, HENRY S

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/649,355

Applicant(s)

ESCHBACH ET AL.

Examiner

Henry S. Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Election of March 7, 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 18-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-32 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9-25-03.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. It is noted that USPTO has received an **Election** filed on March 7, 2006. **Group I** of **Claims 1-17** was elected **without traverse**. The examiner **accepts Applicants' drawing in six sheets with eleven figures** filed on August 26, 2003 along with this application. **Claims 1-32** with a total of three independent claims (Claim 1, Claim 18 and Claim 20) are now pending, while **non-elected Claims 18-19 (Groups II) and Claims 20-32 (Group III)** are both **withdrawn from consideration**. An action follows.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. *The limitation of parent Claim 1 in present invention relates to **a method** comprising: (A) clamping **a pellicle** between a **first frame** and a **second frame**; and (B) attaching at least one of the first frame and second frame to **a reticle**. See other limitations of dependent Claims 2-17.*

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4. Claims 1 and 6-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ikeda et al. (US 6,300,019 B1).

Regarding the limitation of parent **Claim 1**, **Ikeda** et al. have disclosed a process of mounting a pellicle onto a photo-mask using a mounting system so as to prevent a particle from directly lying on a photo-mask used for exposing a wafer. **Each of said pellicle may include a composition of a pellicle membrane and a pellicle frame** (abstract, line 1-6; column 1, line 5-12; column 2, line 5-14). However, Ikeda further specifically discloses in **Figure 2** and may be in other figures that **either two pellicle membranes or one single pellicle membrane can be clamped in between two mounting frames** (column 4, line 47 – column 5, line 10; see using **two different frames** on column 5, line 53-65). The key point is that in the course of using two pellicle membranes, it requires to use the same membranes in this regard (column 4, line 50-54). Since photo-mask is used in between two frames, the attachment of a reticle to at least one of the two frames is necessary in Ikeda's system for higher accuracy (see working figures in columns 4-9). Therefore, Ikeda anticipates limitation of parent Claim 1.

5. Regarding dependent **Claims 6-11**, the required mounting conditions may be explicitly and/or implicitly disclosed in making Ikeda's many pellicle systems (see columns 4-10 for eleven different embodiments). For instance, the pellicle systems as described in **Figure 2** and may be also in other figures.

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Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 2-5 and 12-17 are rejected under 35 U.S.C. 103(a) as obvious over Ikeda et al. (US 6,300,019 B1) in view of Matsukura et al. (US 6,548,129 B2 with a publication date of April 15, 2003 and a US filing date of March 13, 2001), Keys (EP 416,528 A2) or Hamada et al. (US 5,693,382).

The above discussion of the disclosures of the prior art of Ikeda or Claims 1 and 6-11 of this office action is incorporated here by reference. Regarding **Claims 2-5 and 12-17**, Ikeda is

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silent about two things as: (A) using **a polymer material** as pellicle membrane, wherein the polymer is either an amorphous cyclic perfluoropolymer or a thermoplastic polymer having at least 90% transparency as specified in Claims 2-5, and (B) using **a polymer layer** in between reticle and frame as specified in Claims 12-17.

8. With respect to the **silent component in (A) for Claims 2-5**, each of Matsukura, Keys and Hamada has individually taught that in the course of making pellicle for photographic patterning, substantially linear type of **amorphous** fluoropolymers having the claimed repeating units can be used and in some cases it may include cyclic units (see “129” at abstract, line 1-15; see amorphous at column 1, line 34; see cyclic fluoropolymer at column 7, line 37 – column 8, line 34); (see “528” at abstract, line 1-12; see cyclic fluoropolymer at column 3, line 1-5; see amorphous at abstract, line 6); (see “382” at abstract, line 1-20; see cyclic fluoropolymer at column 3, line 48-64; see amorphous at column 3, line 53). By doing so, such a fluoropolymer enables effective process of making pellicle to be suitable in photolithographic patterning at desired wavelength (see “382” at column 2, line 24-42; also see “129” and “528”).

9. With respect to the **other silent thing (B) in Claims 12-17**, it is obvious to use a fluoropolymer to carry the same or similar property (in comparing with pellicle polymer) in between reticle and frame so that such obtained pellicle has the same photo-stability and thermal stability throughout the pellicle system. Additionally, “382” has specifically disclosed the preparation of a frame-supported pellicle by using an adhesive through heating and cooling

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(column 3, line 5-21). Such a process can be readily applied onto the polymer in between reticle and frame.

10. In light of the fact that all involving references are dealing with the preparation of pellicles from mounting pellicle membrane to frame(s) and all are for the same photographic patterning purpose, one having ordinary skill in the art would have therefore found it obvious to (A) apply an amorphous cyclic perfluoropolymer or a thermoplastic polymer having at least 90% transparency to be the material for pellicle membrane, and at the same time apply the same or similar types of fluoropolymer in between reticle and frame as taught by Matsukura, Keys or Hamada. One would expect that such a fluoropolymer enable effective process of making pellicle suitable in photolithographic patterning at desired wavelength. Additionally, more diversified products with at least the same or even better photo-stability and thermal stability throughout the pellicle system may be obtained.

Conclusion

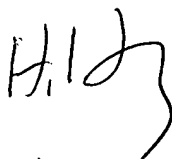
11. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to **a method of mounting a pellicle to a frame**. It comprises two steps as: (A) clamping a pellicle between a first frame and a second frame; and (B) attaching at least one of the first frame and second frame to a reticle: **US Patent No. 4,737,387 to Yen** (or its equivalent **EP 252,673 A2**) only discloses a process to **prepare a removable pellicle** by mounting a pellicle membrane on two connected frames (abstract, line

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1-10; column 2, line 10-39). To be specific, see Figure 2 for pellicle membrane (18) is mounted directly on a first frame (16) and a second frame (14). Although two frames are used, **Yen's pellicle membrane is not in between two frames**. Therefore, Yen fails to teach or fairly suggest the process of mounting pellicle of present invention.


12. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu whose telephone number is (571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300 for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Henry S. Hu



Patent Examiner, Art Unit 1713, USPTO

April 27, 2006


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